

## CACHE RESIDENCE PREDICTION

### ABSTRACT OF THE DISCLOSURE

5 The present invention proposes a novel cache residence prediction mechanism that predicts whether requested data of a cache miss can be found in another cache. The memory controller can use the prediction result to determine if it should immediately initiate a memory access, or initiate no memory access until a cache snoop response shows that the requested data cannot be supplied by a cache.

10 The cache residence prediction mechanism can be implemented at the cache side, the memory side, or both. A cache-side prediction mechanism can predict that data requested by a cache miss can be found in another cache if the cache miss address matches an address tag of a cache line in the requesting cache and the cache line is in an invalid state. A memory-side prediction mechanism can make effective prediction based on observed memory and cache operations that are recorded in a prediction table.

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